

WHAT IS CLAIMED IS:

1                   1.       A method for diagnosing performance in a database, the method  
2 comprising:  
3                   classifying one or more performance problems in a database;  
4                   determining one or more values that quantify an impact for the one or more  
5 performance problems based on performance of operations in the database;  
6                   determining a performance problem based on the one or more time values for  
7 the one or more performance problems; and  
8                   determining a recommendation for a solution for the performance problem.

1                   2.       The method of claim 1, wherein the performance problems include  
2 symptoms and root problems, wherein symptoms are analyzed to determine a root  
3 performance problem.

1                   3.       The method of claim 2, wherein the symptoms are classified from  
2 broader performance problems to narrower performance problems.

1                   4.       The method of claim 2, wherein the solution comprises any symptoms  
2 that were analyzed to determine the root problem.

1                   5.       The method of claim 1, further comprising:  
2                   associating a rule with each performance problem, the rule used to determine  
3 if the performance problem may be a cause of the performance problem; and  
4                   determining the performance problem based on performance problems that  
5 have their associated rule satisfied.

1                   6.       The method of claim 1, wherein the values comprising time values that  
2 quantify the impact of the one or more performance problems.

1                   7.       The method of claim 6, further comprising determining the time values  
2 using at least one of a time model and a wait model.

1                   8.       The method of claim 1, wherein determining the recommendation for  
2 the solution comprises:

3                   determining one or more operations in the database that caused the  
4 performance problem; and  
5                   reviewing stored information for the one or more operations to determine the  
6 solution.

1                   9.       The method of claim 8, wherein the stored information comprises a  
2 snapshot of information for the one or more operations.

1                   10.     The method of claim 1, wherein determining the recommendation for  
2 the solution comprises automatically determining the recommendation for the solution in  
3 response to determining the performance problem.

1                   11.     The method of claim 1, further comprising:  
2                   determining a recommendation rule for the determined performance problem;  
3                   determining one or more operations that caused the performance problem;  
4                   applying the recommendation rule to the one or more operations; and  
5                   determining a recommendation for the solution using the one or more  
6 operations.

1                   12.     The method of claim 1, further comprising outputting the  
2 recommendation for the solution.

1                   13.     The method of claim 1, further comprising determining one or more  
2 operations that are not causing problems in the database.

1                   14.     A method for diagnosing one or more performance problems in a  
2 database, the method comprising:  
3                   collecting information that quantifies an impact for one or more operations  
4 performed in the database;  
5                   associating the information for one or more operations with the one or more  
6 performance problems;  
7                   analyzing the associated information for the one or more performance  
8 problems to determine a performance problem; and  
9                   determining a recommendation for a solution for the performance problem.

1           15.     The method of claim 14, wherein collecting information comprises:  
2           determining when operations that are associated with the one or more  
3 performance problems are being performed; and  
4           timing the operations to generate one or more time values for the operations  
5 that quantify the impact of the operations.

1           16.     The method of claim 15, wherein the operations that are associated  
2 with the one or more performance problems are determined based on at least one of a time  
3 model and a wait model.

1           17.     The method of claim 14, further comprising classifying the  
2 performance problems into symptoms and root problems, wherein symptoms are analyzed to  
3 determine a root performance problem.

1           18.     The method of claim 17, wherein the recommendation for the solution  
2 comprises any symptoms that were analyzed to determine the root problem.

1           19.     The method of claim 14, further comprising:  
2           associating a rule with each performance problem, the rule used to determine  
3 if the performance problem may be a cause of the performance problem; and  
4           determining the performance problem based on performance problems that  
5 have their associated rule satisfied.

1           20.     The method of claim 14, wherein determining the recommendation for  
2 the solution comprises:  
3           determining one or more operations in the database that caused the  
4 performance problem; and  
5           reviewing stored information for the one or more operations to determine the  
6 solution.

1           21.     The method of claim 20, wherein the stored information comprises a  
2 snapshot of information for the one or more operations.

1                   22.     The method of claim 14, wherein determining the recommendation for  
2 the solution comprises automatically determining the recommendation for the solution in  
3 response to determining the performance problem.

1                   23.     The method of claim 14, further comprising:  
2 determining a recommendation rule for the determined performance problem;  
3 determining one or more operations that caused the performance problem;  
4 applying the recommendation rule to the one or more operations; and  
5 determining a recommendation for the solution using the one or more  
6 operations.

1                   24.     The method of claim 14, further comprising outputting the  
2 recommendation for the solution.

1                   25.     The method of claim 14, further comprising determining one or more  
2 operations that are not causing problems in the database.

1                   26.     A computer program product stored on a computer-readable medium  
2 for diagnosing performance in a database, the computer program product comprising:  
3 code for classifying one or more performance problems in a database;  
4 code for determining one or more values that quantify an impact for the one or  
5 more performance problems based on performance of operations in the database;  
6 code for determining a performance problem based on the one or more time  
7 values for the one or more performance problems; and  
8 code for determining a recommendation for a solution for the performance  
9 problem.

1                   27.     The computer program product of claim 26, wherein code for  
2 determining the recommendation for the solution comprises code for automatically  
3 determining the recommendation for the solution in response to determining the performance  
4 problem.

1                   28.     The computer program product of claim 26, further comprising:

code for determining a recommendation rule for the determined performance problem;  
code for determining one or more operations that caused the performance problem;  
code for applying the recommendation rule to the one or more operations; and  
code for determining a recommendation for the solution using the one or more operations.

29. A computer program product stored on a computer-readable medium diagnosing one or more performance problems in a database, the computer program product comprising:  
code for collecting information that quantifies an impact for one or more operations performed in the database;  
code for associating the information for one or more operations with the one or more performance problems;  
code for analyzing the associated information for the one or more performance problems to determine a performance problem; and  
code for determining a recommendation for a solution for the performance problem.

30. The computer program product of claim 29, wherein code for collecting information comprises:  
code for determining when operations that are associated with the one or more performance problems are being performed; and  
code for timing the operations to generate one or more time values for the operations that quantify the impact of the operations.

31. The computer program product of claim 29, wherein code for determining the recommendation for the solution comprises:  
code for determining one or more operations in the database that caused the performance problem; and  
code for reviewing stored information for the one or more operations to determine the solution.

1                   32.     The computer program product of claim 29, wherein code for  
2     determining the recommendation for the solution comprises code for automatically  
3     determining the recommendation for the solution in response to determining the performance  
4     problem.

1                   33.     The computer program product of claim 29, further comprising:  
2                   code for determining a recommendation rule for the determined performance  
3     problem;  
4                   code for determining one or more operations that caused the performance  
5     problem;  
6                   code for applying the recommendation rule to the one or more operations; and  
7                   code for determining a recommendation for the solution using the one or more  
8     operations.